

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

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| To: LEE, Young-Pil The Cheonghwa Bldg. 1571-18 Seocho-dong, Seocho-gu Seoul 137-874, Republic of Korea |
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PCT

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

(PCT Rule 43bis.1)

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| Applicant's or agent's file reference PH-21691-PCT | FOR FURTHER ACTION See paragraph 2 below |
| International application No. PCT/KR2004/001874 | International filing date (day/month/year) 26 JULY 2004 (26.07.2004) |
| Priority date(day/month/year) 26 JULY 2003 (26.07.2003) | |
| International Patent Classification (IPC) or both national classification and IPC IPC7 C07D 487/04 | |
| Applicant POSTECH FOUNDATION et al | |

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☒ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application


2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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| Name and mailing address of the ISA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140 | Authorized officer LEE, Jae Jeong Telephone No. 82-42-481-5604 |
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**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.

PCT/KR2004/001874

Box No. 1 Basis of this opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

a. type of material

- ☐ a sequence listing
☐ table(s) related to the sequence listing

b. format of material

- ☐ in written format
☐ in computer readable form

c. time of filing/furnishing

- ☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 4 - 7, 9 - 12

because:

☐ the said international application, or the said claims Nos. _____
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____
are so unclear that no meaningful opinion could be formed (*specify*):

☒ the claims, or said claims Nos. 4 - 7, 9 - 12 _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the
Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard.

the computer readable form

☐ has not been furnished

☐ does not comply with the standard.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with
the technical requirements provided for in Annex C-bis of the Administrative Instructions.

☒ See Supplemental Box for further details.

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
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Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

| | | | |
|-------------------------------|--------|----------|-----|
| Novelty (N) | Claims | 1 - 3, 8 | YES |
| | Claims | | NO |
| Inventive step (IS) | Claims | 1 - 3, 8 | YES |
| | Claims | | NO |
| Industrial applicability (IA) | Claims | 1 - 3, 8 | YES |
| | Claims | | NO |

2. Citations and explanations :

Reference is made to the following documents:

D1: WO 0068232 A1 (UNISEARCH LIMITED) 16 NOV. 2000

D2: WO 02096553 A2 (SYNTEC GESELLSCHAFT FUR CHEMIE UND TECHNOLOGIE DER INFORMATIONSAUFZEICHNUNG MBH) 05 DEC. 2002

D3: WO 03004500 A1 (POSTECH FOUNDATION) 16 JAN. 2003

D4: WO 03024978 A1 (POSTECH FOUNDATION) 27 MARCH 2003

D5: WO 03055888 A1 (POSTECH FOUNDATION) 10 JULY 2003

D6: SAMSONENKO et. al. "Synthesis and crystal structure of the nanosized supramolecular SmIII complex with macrocyclic cavitand cucurbituril" In: Russian Chemical Bulletin, 2002, 51(10), p.1915-1918

The present invention relates to nanoparticles prepared by the aggregation of cucurbituril derivatives and preparation methods thereof.

D1 discloses a method for producing cucurbit[n]urils, where n is from 4 to 12. Novel cucurbit[n]urils and substituted cucurbit[n]urils are also described. D2 relates to novel inorganic absorbent composites consisting of an open pore, solid and inorganic matrix, comprising cucurbiturils which are chemically linked in the matrix. D3 provides cucurbituril derivatives which have enhanced solubility in common solvents. D4 provides an inclusion compound having a cucurbituril derivative as a host molecule and a metal complex as a guest molecule. A pharmaceutical composition having an anticancer effect can be obtained by using the inclusion compound. D5 provides hydroxycucurbituril derivatives which is easy to further functionalize with enhanced solubility in common solvents. D6 describes a nanosized supramolecular SmIII complex with macrocyclic cucurbituril, and its crystal and molecular structure are established by x-ray diffraction analysis.

Although D1-D6 teach the process for preparing and using various cucurbituril derivatives, D1-D6 do not disclose the features of the subject matter of claims 1 - 3 and 8, which meet the criteria set forth in PCT Article 33(2), (3) and (4). The nanoparticles prepared by cucurbituril derivatives are not anticipated by any of the references on record.

Thus, the invention described in the present application is considered to be new, inventive and industrially applicable.

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of :

Box No. III

The feature of claims 4 - 7, 9 - 12 (pharmaceutical composition including the nanoparticles) are not referred to in the description.
Therefore, claims 4 - 7, 9 - 12 are not supported by the description as required by PCT Article 6.